

REMARKS

This Amendment is submitted in response to the non-final Office Action mailed on August 6, 2008. No fee is due in connection with this Amendment. The Director is authorized to charge any fees which may be required, or to credit any overpayment to Deposit Account No. 02-1818. If such a withdrawal is made, please indicate the Attorney Docket No. 112857-463 on the account statement.

Claims 13-24 are pending in this application. Claims 1-12 were previously canceled without prejudice or disclaimer. In the Office Action, Claims 13-16 and 23 are rejected under 35 U.S.C. §102. Claims 17-22 and 24 are rejected under 35 U.S.C. §103. In response, Claims 13 and 23-24 have been amended. These amendments do not add new matter. At least in view of the amendments and/or for the reasons set forth below, Applicants respectfully submit that the rejections should be withdrawn.

In the Office Action, the Patent Office stated that a new substitute specification is required because Applicants failed to include a clean version of the substitute specification and a statement that the substitute specification includes no new matter when they filed the Preliminary Amendment dated June 16, 2005. Applicants note that a statement that no new matter is contained in the substitute specification was submitted with the June 16, 2005 filing. However, in response to the Patent Office's request, Applicants have resubmitted both marked-up and clean versions of the substitute specification. No new matter has been added thereby.

Currently amended independent Claim 1 recites, in part, a fuel cell separator comprising: a separator body adapted to contact with a generating element to create electrical continuity to said generating element, thereby forming a generating cell; a fluid oxidant supply channel formed on said separator body to supply a fluid oxidant to said generating element; and fluid oxidant supplying means provided on said separator body for supplying said fluid oxidant into said fluid oxidant supply channel, wherein said fluid oxidant supplying means comprises at least one element selected from the group consisting of a fan and a pump.

Similarly, currently amended independent Claims 23 and 24 recite, in part, a fuel cell separator comprising a separator body adapted to contact with said generating element to make electrical continuity to said generating element; a fluid oxidant supply channel formed on said separator body to supply a fluid oxidant to said generating element; and fluid oxidant supplying means provided on said separator body for supplying said fluid oxidant into said fluid oxidant

supply channel, wherein said fluid oxidant supplying means comprises a plurality of elements selected from the group consisting of a fan and a pump. These amendments do not add new matter. The amendments are supported in the Specification at, for example, Abstract, lines 4-9; page 1, paragraph 14, lines 1-4; paragraph 18, lines 1-2; page 3, paragraph 41, lines 1-4; paragraph 42; page 6, paragraph 63, lines 8-11.

In the Office Action, Claims 13-16 and 23 are rejected under 35 U.S.C. §102(b) as being anticipated by Japanese Publication No. 07-249419 to Goto et al. ("*Goto*"). In response, Claims 13 and 23 have been amended. In view of the amendment and/or for at least the reasons set forth below, Applicants respectfully submit that *Goto* fails to disclose or suggest each and every element of independent Claims 13 and 23 and Claims 14-16 that depend therefrom.

Due to consumer demand for portable electronic equipment, fuel cells which are reduced in weight and size have become desirable. See, Specification, page 1, paragraph 4, lines 1-8. Conventional fuel cells include fuel gas and oxygen electrodes sandwiched between a proton conductor to form a membrane electrode assembly ("MEA"). See, Specification, page 1, paragraph 2, lines 1-8. The MEA is placed between oxygen and fuel separators to form the fuel cell body. See, Specification, page 1, paragraph 2, lines 16-21. An air supplying fan collectively supplies oxygen to the oxygen electrode through fluid oxidant supply channels in the oxygen separator. See, Specification, page 1, paragraph 5, lines 5-19. The air supplying fan is provided along a side surface of the fuel cell body. See, Specification, page 1, paragraph 5, lines 17-19. However, it is difficult to reduce these conventional fuel cells in size because the air supplying fan is provided separately from the fuel cell body. See, Specification, page 1, paragraph 6, lines 1-6. This wasted space in the fuel cell is especially large when a plurality of fuel cell bodies are dispersively arranged to drive various elements of electronic equipment. See, Specification, page 1, paragraph 7, lines 1-8. Furthermore, conventional fuel cells suffer from variations in the amount of air supplied by the air supplying fan between a central portion and an outer circumferential portion thereof. See, Specification, page 1, paragraph 8, lines 1-3. Therefore, the fuel cell separator of the present claims includes fluid oxidant supply means, such as a fan or a pump, provided on the separator body. See, Specification, page 1, paragraph 10, lines 1-9; page 2, paragraph 14, lines 1-4; paragraph 18, lines 1-2. By providing the fluid oxidant supply means on the separator body rather than separately from the fuel cell body, the fuel cell may be reduced in size. See, Specification, page 2, paragraph 14, lines 4-6; paragraph 18, lines 2-4; page

3, paragraph 41, lines 10-16. Moreover, the amount of air supplied to the channels can be individually controlled to reduce variations in air supply amount due to a difference in position among the openings of the channels, thereby allowing more stable electric power generation. See, Specification, page 4, paragraph 43, lines 1-9. In contrast, *Goto* fails to disclose every element of the present claims.

For example, *Goto* fails to disclose or suggest fluid oxidant supplying means provided on a separator body for supplying a fluid oxidant into a fluid oxidant supply channel, wherein said fluid oxidant supplying means comprises at least one element selected from the group consisting of a fan and a pump as required, in part, by independent Claims 1 and 23. *Goto* is entirely directed to a conventional fuel cell in which the air supply means is provided separately from the fuel cell body. See, *Goto*, paragraph 39; Drawing 1. For example, *Goto* specifically discloses that “the fuel gas and oxidant gas [] are supplied with the pumps 91 and 92 [] as it is shown in drawing 1,” and drawing 1 specifically shows that the pumps are separate from the fuel cell body. See, *Goto*, paragraph 39; Drawing 1. The Patent Office nevertheless asserts that Drawings 2 and 3 of *Goto* discloses a fluid oxidant supply means 59 which is provided on the separator body. See, Office Action, page 3, lines 14-15. However, the portions of *Goto* relied on by the Patent Office merely disclose flow control valves 59 and 69 which are provided with the separator. See, *Goto*, paragraphs 43-45. *Goto* further states that the flow control valves are equivalent to mere “flow control means.” See, *Goto*, paragraph 48. Nowhere does *Goto* disclose that the flow control valves are fluid oxidant supplying means comprising at least one element selected from the group consisting of a fan and a pump. In fact, the Patent Office admits that *Goto* “is silent towards” the fluid oxidant supply means being a fan or a pump. See, Office Action, page 5, lines 14-18; page 6, lines 6-8. As such, Applicants respectfully submit that *Goto* fails to disclose or suggest fluid oxidant supplying means provided on a separator body for supplying a fluid oxidant into a fluid oxidant supply channel, wherein said fluid oxidant supplying means comprises at least one element selected from the group consisting of a fan and a pump in accordance with the present claims.

Accordingly, Applicants respectfully request that the rejection of Claims 13-16 and 23 under 35 U.S.C. §102(b) to *Goto* be withdrawn.

In the Office Action, Claims 17-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Goto* in view of U.S. Patent No. 6,500,575 B1 to Shiue et al. (“*Shiue*”). In

response, Applicants have amended Claim 13 from which Claims 17-20 depend. Applicants respectfully submit that one of ordinary skill in the art would have no reason to combine the cited references. Furthermore, even if combinable, in view of the amendment and/or for at least the reasons set forth below, the cited references fail to disclose or suggest each and every element of Claims 17-20.

Applicants respectfully submit that one of ordinary skill in the art would have no reason to combine the cited references to arrive at the present claims because the cited references are directed to different fields of invention. For example, *Goto* is entirely directed to a fuel cell comprising an anode, a cathode, an electrolyte arranged between the anode and cathode, and flow control means for the fuel gas and oxidant gas. See, *Goto*, paragraphs 14-15. In contrast, *Shiue* involves the field of rechargeable metal-air batteries. See, *Shiue*, Abstract, lines 1-13. One of ordinary skill in the art understands that fuel cells and batteries are different technologies with different problems. For example, “[f]uel cells are different from electrochemical cell batteries in that they consume reactant, which must be replenished, whereas batteries store electrical energy chemically in a closed system. Additionally, while the electrodes within a battery react and change as a battery is charged or discharged, a fuel cell's electrodes are catalytic and relatively stable.” See, Wikipedia, “Fuel cell.”

Furthermore, the cited references are directed to solving different problems. For example, the entire purpose of *Goto* is to provide a more equal temperature distribution in the fuel cell without the use of a cooling system. See, *Goto*, paragraphs 1, 8. In contrast, *Shiue* is directed to solving the problem of supplying air to the cathodes of Zn-air batteries when they are in cylindrical or prismatic form. See, *Shiue*, column 1, lines 50-61; column 2, lines 8-33. As such, one of ordinary skill in the art would have no reason to combine the battery micro fans of *Shiue* with the fuel cell separator of *Goto* to arrive at the present claims.

Furthermore, even if combinable, the cited references fail to disclose or suggest every element of Claims 17-20. For example, the cited references fail to disclose or suggest fluid oxidant supplying means provided on a separator body for supplying a fluid oxidant into a fluid oxidant supply channel, wherein said fluid oxidant supplying means comprises at least one element selected from the group consisting of a fan and a pump as recited, in part, by independent Claim 13 from which Claims 17-20 depend. As discussed previously, the flow control valve of *Goto* is not a “supply means” but rather a “flow rate control means.” See, *Goto*,

paragraph 48. As such, Applicants respectfully submit that *Goto* fails to disclose a fluid oxidant supply means provided on a separator body. Instead, *Goto* supplies oxygen to its fuel cell through a pump 92 which is separate from the fuel cell body. See, *Goto*, paragraph 39, Drawing 1. Furthermore, the Patent Office admits that *Goto* fails to disclose or suggest that the alleged fluid oxidant supplying means 69 is a fan. See, Office Action, page 5, lines 14-18.

The Patent Office instead relies on *Shiue* for the claimed element. See, Office Action, page 5, lines 19-22. However, *Shiue* also fails to disclose or suggest that its micro fan is provided on the separator body. Instead, the micro fans of *Shiue* are installed in the middle region of the first and second caps of the battery. See, *Shiue*, column 4, lines 19-23. Nowhere does *Shiue* disclose that its micro fan is installed on the separator body, nor does the Patent Office cite support for such claimed element. Therefore, the cited references fail to disclose fluid oxidant supplying means provided on a separator body for supplying a fluid oxidant into a fluid oxidant supply channel, wherein said fluid oxidant supplying means comprises at least one element selected from the group consisting of a fan and a pump as required, in part, by Claims 17-20.

Accordingly, Applicants respectfully request that the rejection of Claims 17-20 under 35 U.S.C. §103(a) to *Goto* and *Shiue* be withdrawn.

In the Office Action, Claim 21 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Goto* in view of U.S. Patent No. 5,258,239 to Kobayashi ("*Kobayashi*"). In response, Applicants have amended Claim 13 from which Claim 21 depends. Applicants respectfully submit that one of ordinary skill in the art would have no reason to combine the cited references. Furthermore, even if combinable, in view of the amendment and/or for at least the reasons set forth below, the cited references fail to disclose or suggest each and every element of Claim 21.

Applicants respectfully submit that one of ordinary skill in the art would have no reason to combine the cited references to arrive at the present claims because the cited references are directed to different fields of invention. As discussed previously, *Goto* is entirely directed to the field of fuel cells. In contrast, *Kobayashi*, like *Shiue*, relates to a metal-air battery. See, *Kobayashi*, Abstract, lines 1-3; column 1, lines 7-9. One of ordinary skill in the art understands that fuel cells and batteries are different technologies with different problems. For example, "[f]uel cells are different from electrochemical cell batteries in that they consume reactant, which must be replenished, whereas batteries store electrical energy chemically in a closed system.

Additionally, while the electrodes within a battery react and change as a battery is charged or discharged, a fuel cell's electrodes are catalytic and relatively stable.” See, Wikipedia, “Fuel cell.”

Furthermore, the cited references are directed to solving different problems. For example, the entire purpose of *Goto* is to provide a more equal temperature distribution in the fuel cell without the use of a cooling system. See, *Goto*, paragraphs 1, 8. In contrast, *Kobayashi* is directed to solving the problem of more precisely controlling the amount of air supplied to the cathode of a metal-air battery. See, *Kobayashi*, column 1, lines 24-51; column 2, lines 5-8. As such, one of ordinary skill in the art would have no reason to combine the battery pump of *Kobayashi* with the fuel cell separator of *Goto* to arrive at the present claims.

Furthermore, even if combinable, the cited references fail to disclose or suggest every element of Claim 21. For example, the cited references fail to disclose or suggest fluid oxidant supplying means provided on a separator body for supplying a fluid oxidant into a fluid oxidant supply channel, wherein said fluid oxidant supplying means comprises at least one element selected from the group consisting of a fan and a pump as recited, in part, by independent Claim 13 from which Claim 21 depends. As discussed previously, the flow control valve of *Goto* is not a “supply means” but rather a “flow rate control means.” See, *Goto*, paragraph 48. As such, Applicants respectfully submit that *Goto* fails to disclose a fluid oxidant supply means provided on a separator body. Instead, *Goto* supplies oxygen to its fuel cell through a pump 92 which is separate from the fuel cell body. See, *Goto*, paragraph 39, Drawing 1. Furthermore, the Patent Office admits that *Goto* fails to disclose or suggest that the alleged fluid oxidant supplying means 69 is a pump. See, Office Action, page 6, lines 6-8.

The Patent Office instead relies on *Kobayashi* for the claimed element. See, Office Action, page 5, lines 19-22. However, *Kobayashi* also fails to disclose or suggest that its piezoelectric pump is provided on the separator body. Instead, the piezoelectric pump of *Kobayashi* is provided on the cell casing. See, *Kobayashi*, column 2, lines 46-68; column 3, lines 55-57; Figures 1, 3A. Nowhere does *Kobayashi* disclose that its piezoelectric pump is provided on the separator body, nor does the Patent Office cite support for such claimed element. Therefore, the cited references fail to disclose fluid oxidant supplying means provided on a separator body for supplying a fluid oxidant into a fluid oxidant supply channel, wherein said

fluid oxidant supplying means comprises at least one element selected from the group consisting of a fan and a pump as required, in part, by Claim 21.

Accordingly, Applicants respectfully request that the rejection of Claim 21 under 35 U.S.C. §103(a) to *Goto* in view of *Kobayashi* be withdrawn.

In the Office Action, Claim 22 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Goto* in view of *Shiue* and further in view of U.S. Patent No. 5,856,035 to Khandkar et al. ("*Khandkar*"). Applicants respectfully submit that the cited references fail to disclose or suggest each and every element of Claim 22.

As discussed previously, *Goto* and *Shiue* fail to disclose or suggest fluid oxidant supplying means provided on a separator body for supplying a fluid oxidant into a fluid oxidant supply channel, wherein said fluid oxidant supplying means comprises at least one element selected from the group consisting of a fan and a pump. The Patent Office relies on *Khandkar* merely as support for an opening elongated in the transverse direction to provide air flow. See, Office Action, page 7, lines 3-8. Thus, Applicants respectfully submit that *Khandkar* fails to remedy the deficiencies of *Goto* and *Shiue* with respect to the present claims.

Accordingly, Applicants respectfully request that the rejection of Claim 22 under 35 U.S.C. §103(a) to *Goto* in view of *Shiue* and further in view of *Khandkar* be withdrawn.

In the Office Action, Claim 24 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Goto* in view of U.S. Patent No. 6,127,058 to Pratt et al. ("*Pratt*"). Applicants respectfully submit that the cited references fail to disclose or suggest each and every element of Claim 24.

As discussed previously, *Goto* fails to disclose or suggest fluid oxidant supplying means provided on a separator body for supplying a fluid oxidant into a fluid oxidant supply channel, wherein said fluid oxidant supplying means comprises at least one element selected from the group consisting of a fan and a pump. The Patent Office relies on *Pratt* merely as support for an electronic applied device comprising a board with a plurality of fuel cells. See, Office Action, page 7, lines 19-22; page 8, lines 1-6. Thus, Applicants respectfully submit that *Pratt* fails to remedy the deficiencies of *Goto* with respect to the present claims.


Accordingly, Applicants respectfully request that the rejection of Claim 24 under 35 U.S.C. §103(a) to *Goto* in view of *Pratt* be withdrawn.

For the foregoing reasons, Applicants respectfully submit that the present application is in condition for allowance and earnestly solicit reconsideration of same.

Respectfully submitted,

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